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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>5</sup> :</b>  A21D 2/18	<b>A1</b>	<b>(11) International Publication Number:</b> WO 90/07880  <b>(43) International Publication Date:</b> 26 July 1990 (26.07.90)
<b>(21) International Application Number:</b> PCT/IT90/00009 <b>(22) International Filing Date:</b> 18 January 1990 (18.01.90)  <b>(30) Priority data:</b> 47549 A/89 19 January 1989 (19.01.89) IT  <b>(71) Applicant (for all designated States except US):</b> DICOFARM S.p.A. [IT/IT]; Via Francesco Saverio Nitti, 11, I-00191 Roma (IT).  <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> CAMELLI, Gianfranco [IT/IT]; Via Pieve Tesino, 75, I-00124 Roma (IT).  <b>(74) Agent:</b> MASSARI, Marcello; Via Fontanella Borghese, 23, I-00186 Rome (IT).		<b>(81) Designated States:</b> AT (European patent), AU, BE (European patent), BR, CA, CH (European patent), DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GB (European patent), HU, IT (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), SU, US.  <b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> COMPOSITION OF A DIETETIC FOOD IN THE FORM OF BISCUITS WITH HIGH CONTENTS IN ALIMENTARY FIBER AND REDUCED CONTENTS IN CALORIES, AND METHOD FOR PRODUCING THE SAME  <b>(57) Abstract</b>  Dietetic food in form of biscuits with high contents in alimentary fibers and reduced contents in calories, containing the following ingredients in the following percentages of weight: wheat meal 40-60%, sugar 10-16 %, refined vegetable oil 10-16 %, glucomannan 5-25 %, maize meal 5-10 %, honey 0,1-2 %, ammonium bicarbonate 1 %, refined salt 0,2-1 %, sodium bicarbonate 0,2-0,5 %, flavours 0,3-0,6 % and, besides, water in the proportion of 11 kgs per 100 kgs, of the above. The method includes the following steps: a) intimate blending apart glycomannan and vegetable oil; b) kneading together the other ingredients; c) amalgamating in the previous mixture the blend of glycomannan and vegetable oil; d) compressing the final knead in the normal shapes led by rolls, used to mould the biscuits; e) depositing the obtained shapes on a conveyor belt that passes through various cooking rooms with increasing temperatures from 130°C to 180°C.		

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COMPOSITION OF A DIETETIC FOOD IN THE FORM OF BISCUITS  
WITH HIGH CONTENTS IN ALIMENTARY FIBER AND REDUCED CONTENTS  
IN CALORIES, AND METHOD FOR PRODUCING THE SAME

This invention concerns a dietetic aliment in form  
of biscuits with high contents in natural fibers  
and low contents in calories.

5 The invention concerns also the methods for produ-  
cing this aliment.

The aliments eaten by the largest part of the popu-  
lations of the most developed countries are very  
lacking in fibers because of the procedures of  
refinement to which many of the base products of  
10 the nourishment are subjected.

Among these procedures, there are: flour's sifting,  
rice and other cereals and similar's hulling.

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This lack in fiber brings two very serious inconveniences:

- a growing laziness of the intestine;
- the difficulty in reaching the sensation of satiety with a consequent lasting of the pangs of hunger even after eating a sufficient quantity of food from the point of view of the caloric contribution, with a consequent overalimentation.

These inconveniences -by themselves- and even more so if associated, are the main responsables of the excess of weight, until obesity that afflicts a high percentage of people belonging to the above mentioned populations.

As it seems impossible either to re-educate the consumers to eat rough products, or, in consequence, to induce the alimentary industries not to produce refined foods, modern dietetics, at present, aims at studying compositions of products containing natural fibers, and prescribing them as meals' fiber integrators, especially in people with an altered lipidic or glycidic metabolism.

One of the main, if not the most important supplier of natural fibers in a concentrated shape, is glucomannan, that is the fundamental ingredient of such fiber integrators.

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Glucomannan is drawn from Amorphofallus Konjac,  
a tuber of Far East origin.

It has the peculiarity of increasing its volume  
when soaked with water, until 100 times its initial  
5 volume.

Therefore glucomannan is very satisfying from the  
point of view of provoking the desired sense of  
satiety.

However, glucomannan, because of its tendency to  
10 loose its peculiarities of swelling when subjected  
to manipulations and cooking doesn't fit for making  
finished goods and all the attempts made up to  
now to produce glucomannan goods easily eatable  
and provided with alluring peculiarities of taste  
15 and flavour have failed.

Therefore up to now glucomannan has been given  
almost exclusively in capsules and its confection  
of medicinal type doesn't attract the consumers  
to use it.

20 Applicant, on the contrary, has tested and got  
ready a particular composition of ingredients inclu-  
ding glucomannan, that, when subjected to a procedu-  
re involving a precise succession of operations,  
allows the production of biscuits which fully sati-  
25 sfy the need to supply glucomannan's fiber in an

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alluring and tasteful pleasant shape.

Applicant has found that some compositions containing the ingredients quoted in the following examples in the indicated range of proportions, are  
5 suitable, when appropriately prepared and baked, to form biscuits with a good flavour and a very good taste.

The general composition in weight is as follows:

	Wheat meal	40÷60%
10	Sugar	10÷16%
	Refined vegetable oil	10÷16%
	Glucomannan	5÷25%
	Maize meal	5÷10%
	Honey	0,1÷ 2%
15	Ammonium bicarbonate	1%
	Refined salt	0,2÷ 1%
	Sodium bicarbonate	0,2÷0,5%
	Flavours	0,3÷0,6%

and, besides, water in the proportion of 11 kgs  
20 per 100 kgs, of the above.

In particular, applicant has found out, after a number of tests, that in order to obtain the best results in a diet, the two following compositions, respectively for biscuits with 10% and 20% of gluco-  
25 mannan, have proved to be excellent to the task:

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Normal biscuit (10%):

	Wheat meal	52%
	Sugar	13,5%
	Refined vegetable oil	13,2%
5	Glucomannan	10,0%
	Maize meal	7,8%
	Honey	1,4%
	Ammonium bicarbonate	1,07%
	Refined salt	0,25%
10	Sodium bicarbonate	0,21%
	Flavour	0,3%

Strong biscuit (20%):

	Wheat meal	44,0%
	Sugar	13,5%
15	Refined vegetable oil	13,2%
	Glucomannan	20,0%
	Maize meal	5,8%
	Honey	1,4%
	Ammonium bicarbonate	1,07%
20	Refined salt	0,25%
	Sodium bicarbonate	0,21%
	Flavour	0,3%

In particular in the product tested by the applicant  
the quality of Glucomannan used is known like highly  
25 refined and with high molecular weight and viscosi-

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ty, that has proved to be the best for the aims of the invention.

In connection with both the normal type and strong type of biscuit, a method has been devised that, unique, allows the production of the biscuits.

This method includes the following steps:

- a) intimate blending apart glucomannan and vegetable oil;
- b) kneading together the other ingredients;
- 10 c) amalgamating the blend of glucomannan and vegetable oil in the previous mixture;
- d) compressing the final knead in the normal shapes led by rolls used to mould the biscuits;
- e) depositing the obtained shapes on a conveyor
- 15 belt that passes through various cooking rooms with increasing temperatures from 130°C to 180°C.

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CLAIMS

1. A composition of a dietetic food in the form of biscuits with high contents in alimentary fiber and reduced caloric contents generally including:

Wheat meal	40÷60%
Sugar	10÷16%
Refined vegetable oil	10÷16%
Glucomannan	5÷25%
Maize meal	5÷10%
Honey	0,1÷ 2%
Ammonium bicarbonate	1%
Refined salt	0,2÷ 1%
Sodium bicarbonate	0,2÷0,5%
Flavours	0,3÷0,6%

and, besides, water in the proportion of 11 kgs per 100 kgs.

2. The composition of a dietetic food in the shape of biscuits of claim 1, (normal type) including in particular:

Wheat meal	52%
Sugar	13,5%
Refined vegetable oil	13,5%
Glucomannan	10,0%
Maize meal	7,8%
Honey	1,4%

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Ammonium bicarbonate	1,07%
Refined salt	0,25%
Sodium bicarbonate	0,21%
Flavour	0,3%

3. The composition of a dietetic food in the form of biscuits (strong type) according to claim 1, including in particular:

Wheat meal	44,0%
Sugar	13,5%
Refined vegetable oil	13,5%
Glucomannan	20,0%
Maize meal	5,8%
Honey	1,4%
Ammonium bicarbonate	1,07%
Refined salt	0,25%
Sodium bicarbonate	0,21%
Flavour	0,3%

4. A method for producing a biscuit with high contents in alimentary fibers and reduced caloric contents using the ingredients of the claim 1, comprising the following steps:

- a) intimate blending apart glucomannan and vegetable oil;
- b) kneading together the other ingredients;
- c) amalgamating in the previous mixture the blend of glucomannan and vegetable oil;
- d) compressing

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# INTERNATIONAL SEARCH REPORT

International Application No. PCT/IT 90/00009

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all: <sup>1</sup> According to International Patent Classification (IPC) or to both National Classification and IPC IPC <sup>5</sup> : A 21 D 2/18		
<b>II. FIELDS SEARCHED</b> Minimum Documentation Searched <sup>7</sup> Classification System: IPC <sup>5</sup> Classification Symbols: A 21 D		
Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>9</sup></b>		
Category <sup>10</sup> :	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
A	US, A, 4379173 (Y. MASUYAMA) 5 April 1983 see claims; example 5  -----	1
<p><sup>10</sup> Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&amp;" document member of the same patent family</p>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search 31st May 1990		Date of Mailing of this International Search Report 29. 06. 90
International Searching Authority EUROPEAN PATENT OFFICE		Signature of Authorized Officer H. Daniels      H. DANIELS

## SA 33989

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